The validation study of tissue specimen for limitation of endoscopic submucosal dissection indication criteria in gastric cancer

H.S. Choi¹, H.J. Chun², I.K. Yoo¹, J.M. Lee¹, S.H. Kim¹, E.S. Kim², B. Keum¹, Y.T. Jeen³, H.S. Lee¹, C.D. Kim¹

¹Division of Gastroenterology and Hepatology, Department of Internal Medicine, Korea University College of Medicine, Seoul, Republic of Korea
²Department of Internal Medicine, Korea University College of Medicine, Seoul, Republic of Korea
³Division of Gastroenterology and Hepatology, Department of Internal Medicine, Seoul, Republic of Korea

Introduction: Endoscopic submucosal dissection (ESD) is now accepted as curative treatment modality for early gastric cancer without lymph node metastasis. The indication criteria of ESD have been evaluated according to the size of lesion, depth of invasion and histology type. But there was recently controversy over limitation of ESD indication. It is not easy to validate size and depth of cancer lesion before ESD, and they are inaccurate according to tissue fixation method. The aim of this study is to validate tissue specimen by tissue fixation device according to variable resected tissue size.

Methods: We made tissue fixation device for validation of ESD specimen. Two circular tissues were resected in the antrum and body of sixty porcine stomachs with 2.0cm/3.0cm/4.0cm diameter. One piece was inserted in a fixation device and the other was manually pinned on corkboard. Pressure gauge was used to measure resected specimen with equal pressure in every fixation device. After fixation for 24hrs, we examined the diameter and thickness of submucosa.

Results: We validated the specimen size and depth with considering elasticity and eccentricity. The mean diameter was 23.76mm/32.55mm/44.67 mm in fixation device group and 21.50mm/31.61mm/44.20 in manual pinning group, respectively (2cm/3cm/4cm tissue). The mean thickness of submucosa using fixation device was 403.57 ± 84.40 µm/396.63 ± 102.51 µm/415.19 ± 70.79 µm and that by pinning manually was 403.57 ± 179.47 µm/555.04 ± 203.23 µm/684.93 ± 284.55 µm. (2cm/3cm/4cm tissues) Considering standard deviation, thickness in manual pinning group was much more dispersed than that in fixation device group (p value: 0.048/0.029/0.004, 2cm/3cm/4cm tissue, Fligner-Killeen test of homogeneity of variances).

Conclusion: In various size resected tissues, the thickness of submucosa was relatively consistent in fixation device group, while it was much more variable in conventional fixation method group. Further study is needed for validation of early gastric cancer size related to indication of ESD.